

ABSTRACT

At least a pair of electrodes comprising semiconductors or a semiconductor compounds are arranged to be submerged in water or a liquid of a hydrogen-containing organic compound. Applying pulse electric power between the at least one pair of the electrodes activates hydrogen atoms contained in the water or the hydrogen-containing organic compound to produce hydrogen gas. The hydrogen activating apparatus thus constructed eliminates the necessity of doping electrolysis or the like for improving an electric conductivity of the water and allows production of hydrogen from materials containing hydrogen atoms such as water and the hydrogen-containing compound or the like with a low energy.